



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,956	06/27/2003	Hidetoshi Tsuzuki	03560.003316.	4847

5514 7590 12/27/2005

FITZPATRICK CELLA HARPER & SCINTO  
30 ROCKEFELLER PLAZA  
NEW YORK, NY 10112

EXAMINER

VAN, LUAN V

ART UNIT	PAPER NUMBER
----------	--------------

1753

DATE MAILED: 12/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/606,956

Applicant(s)

TSUZUKI ET AL.

Examiner

Luan V. Van

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 20-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 20-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

conductive substrate as taught by either Shang or Nakamura, because using a magnetic material in the conveyor assembly facilitates the movement of the conductive substrate and maintains the conductive substrate in a flat manner for uniform plating.

### ***Response to Arguments***

Applicant's arguments filed November 3, 2005 have been fully considered but they are not persuasive.

In the arguments presented on page 7 of the amendment, the applicant suggests that in Figures 8-10 of Kramer it is not seen that hard backing 64, identified as a second member, is disposed over an upper surface of two adjacent contact rings 44, identified as first members. However, the examiner would like to point out to a separate embodiment of Kramer, as shown in Fig. 15 of Kramer, where it clearly shows that hard backing 64 is disposed over an upper surface of contact ring 44. Therefore, as stated in the previous office action, it would have been obvious to one having ordinary skill of the art to modify the plating apparatus of Polan by using the plurality of backing members of Kramer, because using the plurality of backing members ensures plating on only one side of the conductive substrate and ensures continuous electrical contact of the conductive substrate with the power source over the entire plating length thereby

Art Unit: 1753

minimizing variations in the cathode current distribution (column 2 lines 48-54), resulting in more uniform plating.

The applicant further opines that hard covering 64 as shown in Kramer is not readily detachable and that it is permanently joined to the bands. The examiner respectfully disagrees. In Kramer column 4, lines 50-55, it is disclosed that sealing bands are mounted in the hard covering. Kramer never suggests or discloses that the sealing bands and the hard backing are not detachable. However, even assuming the sealing bands and the hard backing of Kramer are not detachable, modifying the sealing bands and the hard backing to be detachable or separable is prima facie obviousness (MPEP 2144.04); since the sealing bands and the hard backing are subject to wear and chemical attack from the electrolyte, it would be desirable to make the sealing bands and the hard backing to be detachable in order to service or replace them.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

**DETAILED ACTION**

***Response to Amendment***

Applicant's amendment of November 3, 2005 does not render the application allowable.

***Status of Objections and Rejections***

The rejection of claims 1-19 is obviated by Applicant's cancellation.

All other rejections from the previous office action are maintained.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 20 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Polan in view of Kramer.

Regarding claims 20 and 25, Polan teaches plating apparatus (and method) comprising: a plating vessel for holding a plating bath containing at least metal ions (column 4 lines 29-34; an electrolyte solution inherently contains metal ions); a conveying device for conveying a long conductive substrate and immersing the long conductive substrate in the plating bath (figure 1); a facing electrode disposed in the plating bath so as to face one surface of the conductive substrate (figure 1); voltage application means for performing plating on the one surface of the conductive substrate by applying a voltage between the conductive substrate and said facing electrode (figure 1, power source 18); and film-deposition suppression means fixedly disposed in said plating vessel so that at least a portion of said film-deposition suppression means is close to shorter-direction edges of the conductive substrate, at least the portion of said film-deposition suppression means close to the shorter-direction edges of the conductive substrate being conductive (column 2 lines 19-28), wherein by holding the conductive portion of said film-deposition suppression means and the conductive substrate at substantially the same potential, and film deposition on the other surface of the conductive substrate is suppressed. Polan teaches that the frame and the article to be plated are both rendered cathodic and are connected to the same negative terminal of a power source; the conductive frame and the conductive article are maintained at

Art Unit: 1753

the same potential since they are in contact with each other. Although Polan teaches that the frame assembly comprising of a solid backing plate to treat only one surface of the conductive substrate is preferably formed from a nonconductive material, Polan discloses that a frame formed from an electrically conductive material can be used (column 2 lines 19-28).

Polan does not explicitly teach that the second members is disposed over upper surfaces two adjacent ones of first members nor that the second member comprises a projection facing the conductive substrate is a surface of said first members facing the conductive member are disposed on substantially the same plane.

Kramer teaches a plurality of first members (figure 15, contact rings 46) are disposed with a gap between adjacent ones of said members and are fixed by supporting members, and wherein each of second members (figure 15, hard backings 64) is disposed over upper surfaces two adjacent ones (contact rings 46) of said first members. The contact rings and hard backings as taught by Kramer are formed in the longitudinal direction of the conductive substrate to be plated. Kramer teaches a plating apparatus, wherein a surface of first member facing a surface of the conductive substrate is substantially flat, wherein said second member comprises a projection (figure 15, backings 64 between contact rings 44) for filling the gap, and wherein a surface of said projection facing the conductive substrate is a surface of said first

Art Unit: 1753

members facing the conductive member are disposed on substantially the same plane (figure 15, contact rings 44 and backings 64 are on substantially the same plane).

It would have been obvious to one having ordinary skill of the art to modify the plating apparatus of Polan by using the plurality of backing members of Kramer, because using the plurality of backing members ensures plating on only one side of the conductive substrate and ensures continuous electrical contact of the conductive substrate with the power source over the entire plating length thereby minimizing variations in the cathode current distribution (column 2 lines 48-54), resulting in more uniform plating.

Regarding claim 22, Polan teaches a plating apparatus wherein said film-deposition suppression means is extended outside of the shorter-direction edge of the conductive substrate (column 6 lines 13-19). The edge shields are extended outside of the conductive substrate.

Regarding claims 23 and 24, Polan teaches that the frame assembly can be mounted in the plating tank in any suitable manner or to a suitable support structure (column 6 lines 39-46). The difference between the reference and the instant claims is that the reference does not teach using foot members.



However, it would have been obvious to one having ordinary skill of the art to modify the plating apparatus of Polan by using foot members, because such members are suitable for supporting the frame assembly as suggested by Polan.

Claims 21 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Polan in view of Kramer, and further in view of either Shang or Nakamura.

Polan teaches the apparatus and method as described above. Polan does not explicitly teach means to contact the conductive substrate by a magnetic force.

Shang teaches a plating apparatus and method wherein the conductive substrate is conveyed while causing the film-deposition suppression means to contact the conductive substrate by a magnetic force (column 2 lines 41-51). Shang teaches a plating apparatus wherein said member comprises magnets (figures 1 and 3-4, magnets 13) for maintaining contact with the conductive substrate.

Nakamura also teaches a plating apparatus and method wherein the conductive substrate is conveyed while causing the film-deposition suppression means to contact the conductive substrate by a magnetic force (column 4 lines 28-33).

It would have been obvious to one having ordinary skill of the art to modify the plating apparatus and method of Polan and Kramer by using magnets to contact the

Art Unit: 1753


TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan V. Van whose telephone number is 571-272-8521. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LVV  
12/14/2005

  
NAM NGUYEN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700